

## ABSTRACT OF THE DISCLOSURE

MULTIPHASE CLOCK RECOVERY USING D-TYPE PHASE DETECTOR

5 A method of extracting a clock signal from a data  
stream, by generating a plurality of multiphase clock  
signals, selecting one of the multiphase signals based on  
synchronization states identifying which of the multiphase  
clock signals is most closely aligned with the data stream,  
and sampling the data stream using the selected multiphase  
signal to produce a retimed data signal. The multiphase  
clock signals may be subharmonics of the data stream. The  
selecting step may include the determination of whether the  
multiphase clock signals are either early or late with  
respect to the data stream, particularly using D-type flip-  
flops. The synchronization states are used to define which  
of the rising edges of the multiphase clock signals is most  
closely aligned with an edge of the data stream. A  
multiphase voltage-controlled oscillator may be used to  
provide the multiphase clock signals. An error signal is  
created using the multiphase clock signals and the data  
stream which is applied to a charge pump, and the multiphase  
clock signals are corrected using a control voltage output  
20 of the charge pump.